

# Working Group Meeting Sep. 30, 2009 Boulder, CO

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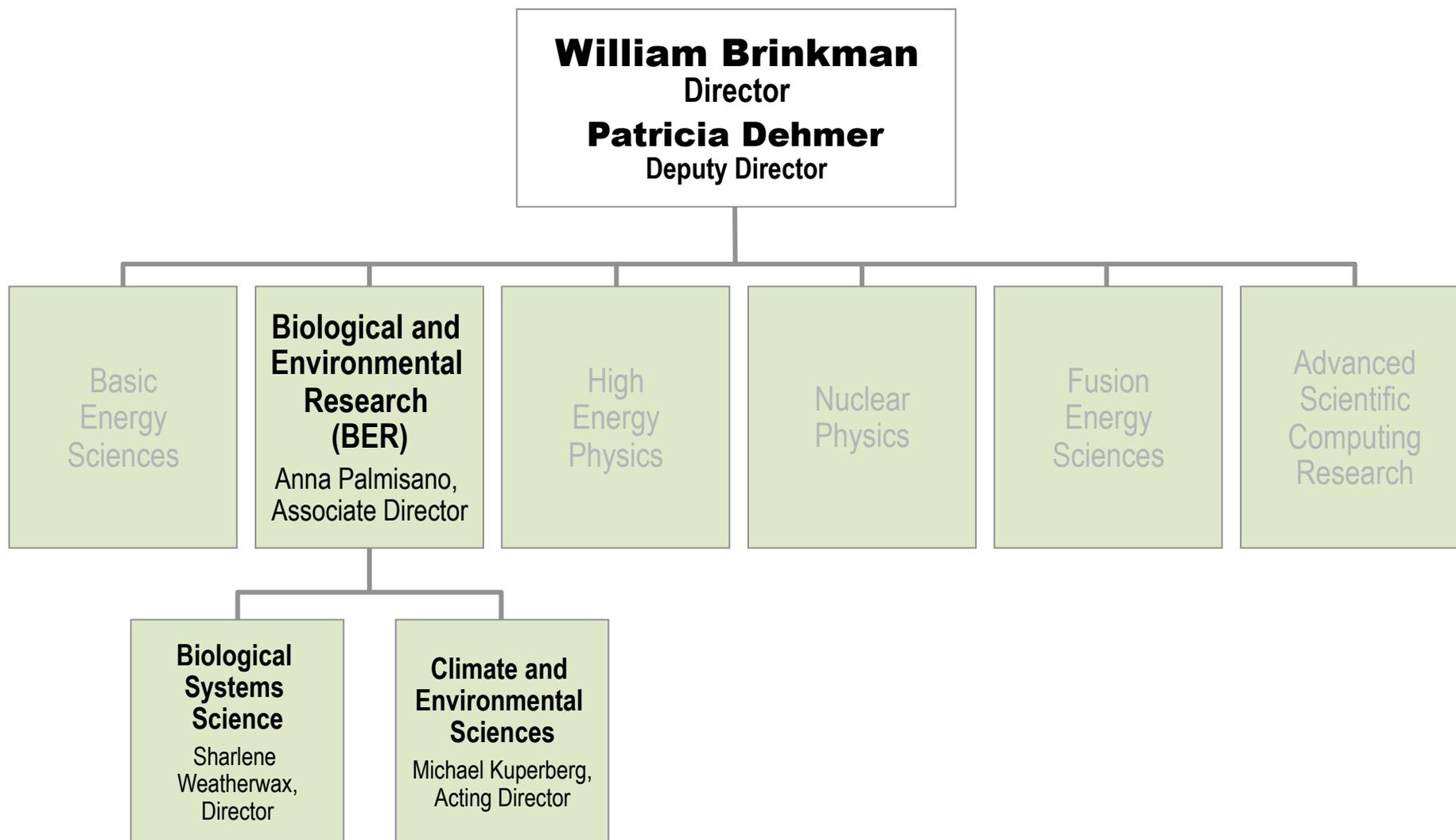


U.S. DEPARTMENT OF  
**ENERGY**

Office  
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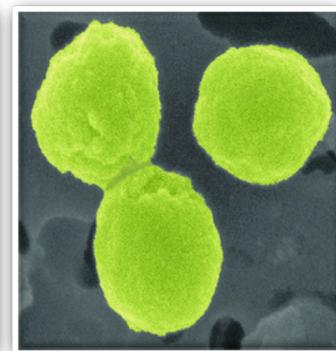
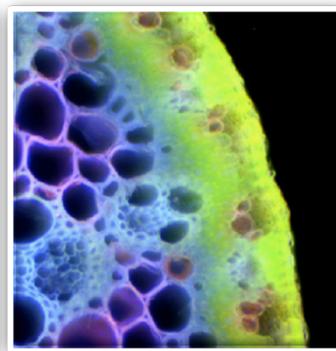
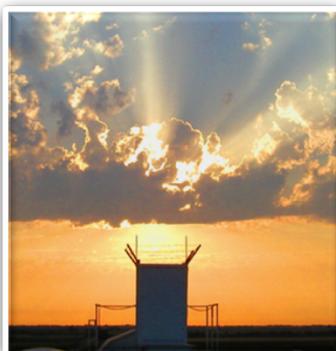
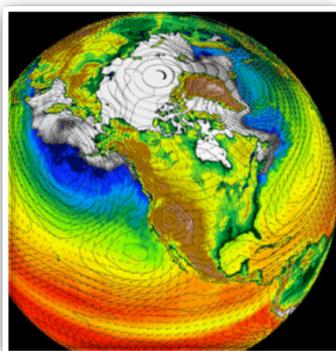
Office of Biological  
and Environmental Research

# Department of Energy Office of Science



# Biological and Environmental Research Mission

- To understand complex biological, climatic, and environmental systems across spatial and temporal scales by:
  - Exploring the frontiers of genome-enabled biology
  - Discovering the physical, chemical, and biological drivers and impacts of climate change
  - Seeking the geochemical, hydrological, and biological determinants of environmental sustainability and stewardship



# Biological and Environmental Research Mission drivers

- Provide the **foundational science** for:
  - Supporting the development of biofuels as major, secure, and sustainable national energy resources
  - **Understanding potential effects of greenhouse gas emissions on Earth's climate and biosphere and the implications of these emissions for our energy future**
  - Predicting the fate and transport of contaminants in the subsurface environment at DOE sites
  - Developing new tools to explore the interface of biological and physical sciences

# Biological and Environmental Research Divisions

## Biological Systems Science Division

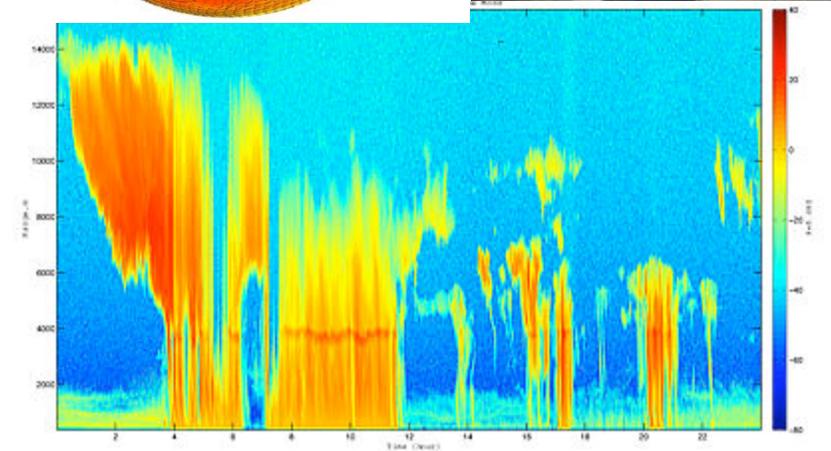
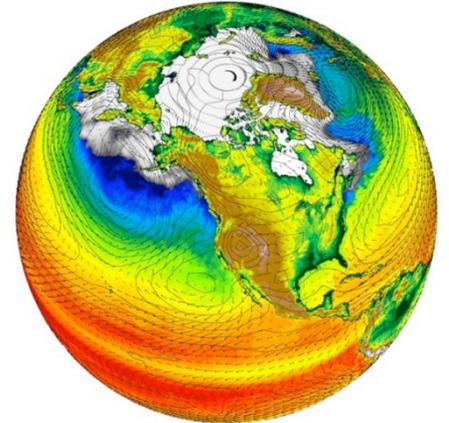
- Genomics:GTL
- Bioenergy Research Centers
- DOE Joint Genome Institute
- Low Dose Radiation
- Radiochemistry, Imaging, and Instrumentation
- Structural Biology

## Climate and Environmental Sciences Division

- Climate Change Research
- ARM Climate Research Facility
- Environmental Remediation Science Program
- Environmental Molecular Sciences Laboratory

# BER Atmospheric Research

- Objective: Provide the observations and basic research needed to improve scientific understanding of the fundamental physics of clouds and the interactions between clouds, aerosols, and radiative feedback processes in the atmosphere to improve climate model predictions
- Two components
  - ARM Climate Research Facility (ACRF)
  - Atmospheric System Research

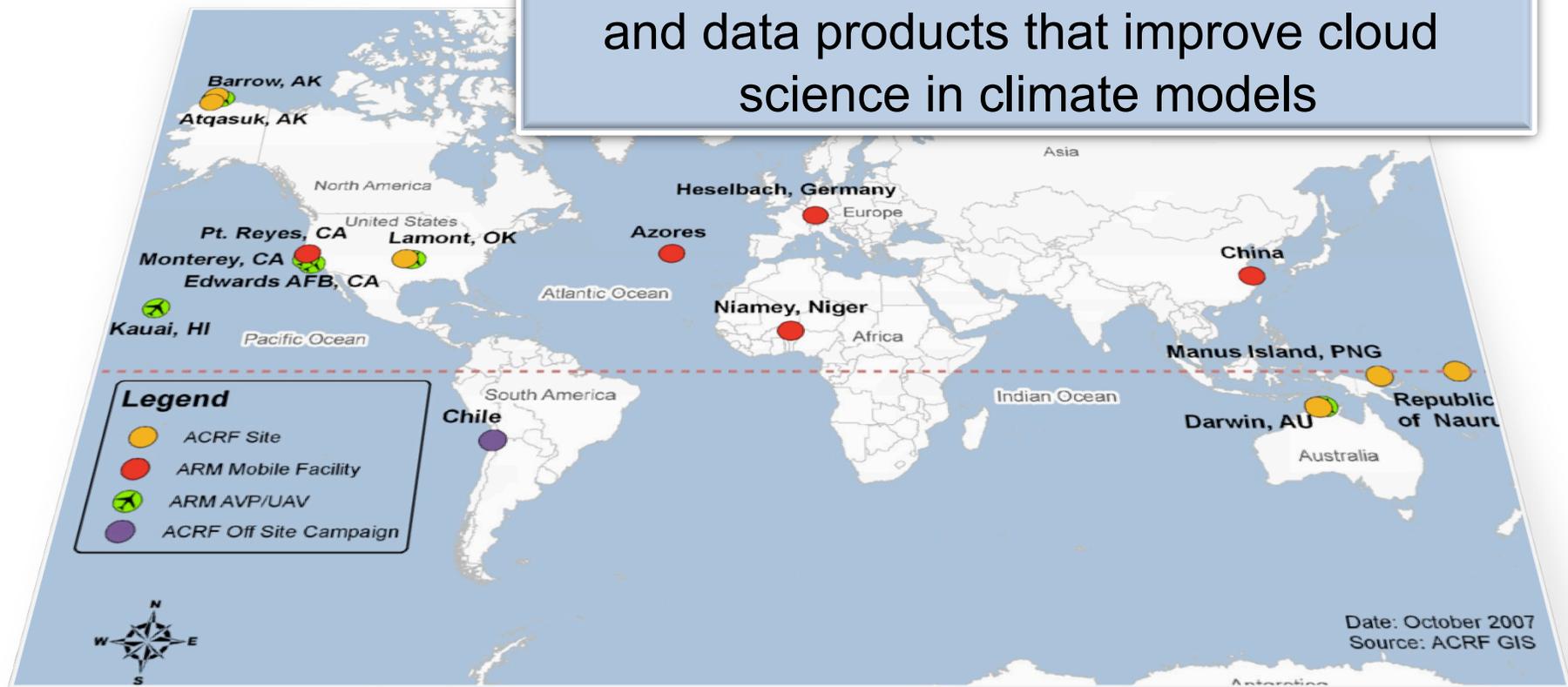




# DOE Scientific User Facility ARM Climate Research Facility

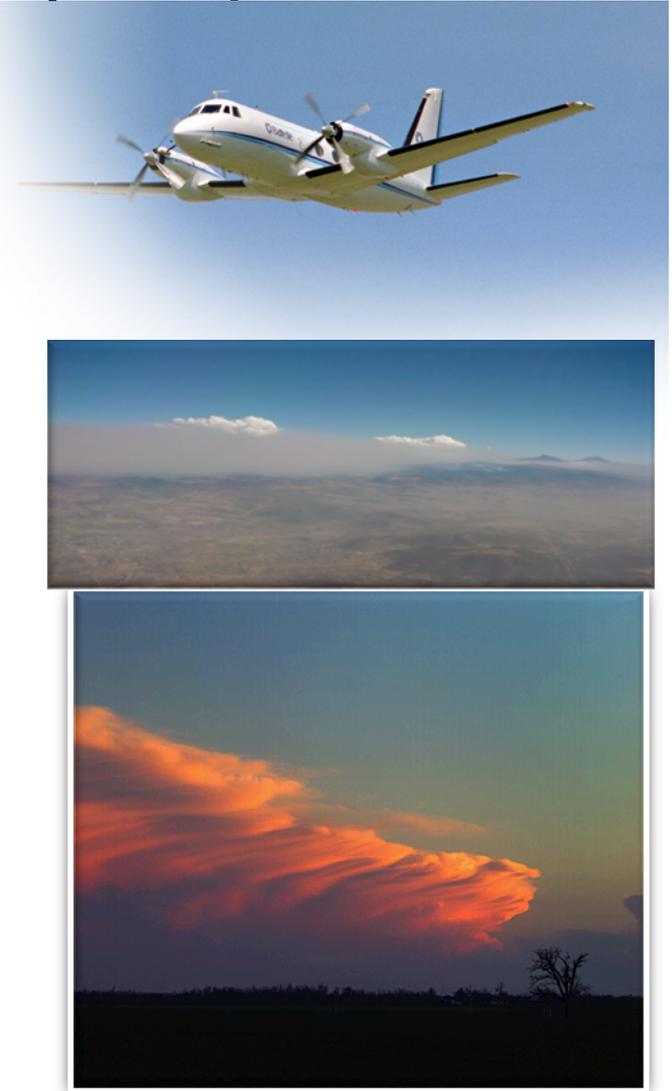


Provides continuous field measurements and data products that improve cloud science in climate models



# Atmospheric System Research (ASR)

- Objective: Improve scientific understanding of the fundamental physics of clouds and the interactions between clouds, aerosols, and radiative feedback processes in the atmosphere to improve climate model predictions
- Formerly
  - ARM science
  - Atmospheric Science Program
- ASR campaigns compete with all ACRF proposals and undergo Science Board review



# Atmospheric System Research (ASR)

- New ACRF instruments provide a unique asset for accelerating climate change science, specifically ASR science
- The addition of these instruments requires ASR support for the development of new retrieval algorithms and new data products. These products are critical for advancing ASR science.
- Requirements for these products will be developed in the working groups